Space Weather Forecast

Issued on Sunday, 28 November 2021 at 00:35 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Magnetic storms on Day 1 (28 Nov) due to the arrival of a coronal mass ejection.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been Very Low over the past 24 hours, with no significant X-ray flares. There are currently three active sunspot regions on the visible disc. The two more complex regions are in the southern hemisphere, but neither are particularly complex and have shown little activity so far. A new spot has rotated over the northeast limb, and currently appears small and simple, although this may change as it becomes more fully visible. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind was at background levels for much of the period, before a CME arrival occurred at 27/2150 UTC. Wind speeds varied between 300-360km/s, before jumping from 300 up to 380 km/s when the CME arrived. The Interplanetary Magnetic Field was weak, but reached moderate levels with the CME arrival. The north-south component varied weakly initially, but started to vary a little more strongly once the CME arrived. Geomagnetic Activity was Quiet (Kp 0-1).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to be Low or Very Low, with the possibility of common-class flares from either of the two more complex sunspot regions on the disc. There is also an above background risk (5%) of isolated Moderate flares (R1 Blackouts).

Solar Wind / Geomagnetic Activity: The recent CME arrival has given some disturbed solar wind conditions, despite wind speeds remaining at slow speeds. A further CME from an eruption early on the 26 Nov has now been reassessed as likely missing, but with low confidence, giving a small chance of some impact at Earth late Day 2 or Day 3 (29 or 30 Nov). There may also be weak additional enhancements from minor coronal holes on Day 1. Disturbed conditions from the CME are expected to settle over the next 24 hours or so. Geomagnetic activity is likely to be Unsettled to Active at first, with a chance of G1/Minor Storms on Day 1 (28 Nov). Conditions easing back to mostly Quiet to Unsettled thereafter, but with a chance of Active intervals if we do see a glancing blow from the second CME later in the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms observed.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	5	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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